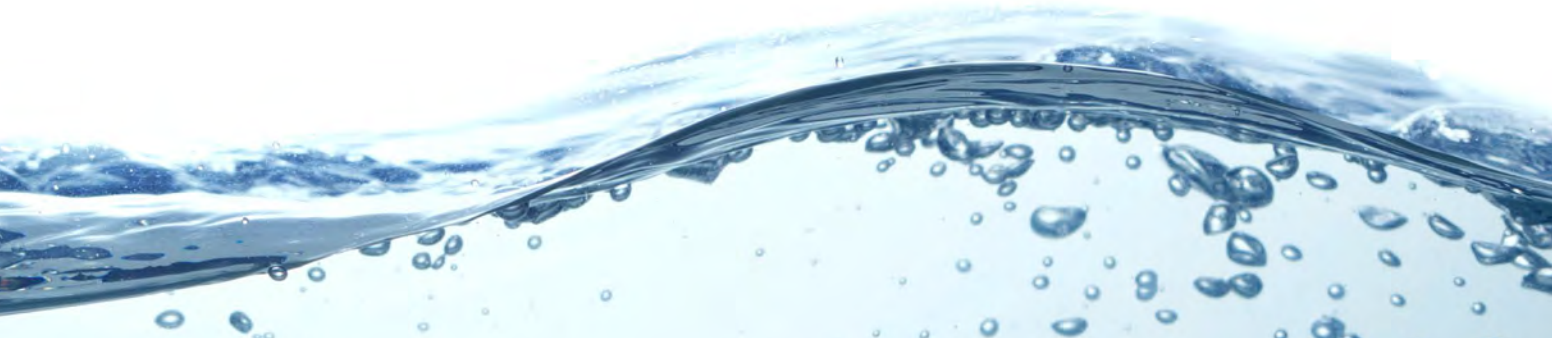




Water-Source Heat Pumps

M2 SERIES



Modular Self-Contained Unit Water-Source Heat Pumps
(3-70 tons)

Features:

- Water-source and geothermal heat pump self-contained units with capacities from 3-70 tons
- 10%-100% variable capacity R-410A scroll compressors for load matching cooling and heating with improved part load efficiency
- Double wall rigid polyurethane foam injected panel construction reduces air leakage and dampens resonated sound
- Modulating hot gas reheat humidity control
- Backward curved plenum supply fans
- Power return, power exhaust, and energy recovery wheel configurations
- Service access doors with removable pin hinges and lockable handles
- Factory installed gas, electric, hot water, or steam emergency heating
- Labeled components for quick and easy installation

○ *Makeup Air Applications
Up to 100% Outside Air*

○ *Dehumidification and Premium
Filtration Capabilities*

○ *A Wide Variety of Factory
Installed Features*

○ *Comfort or Process
Heating and Cooling*

WSHP | M2 series

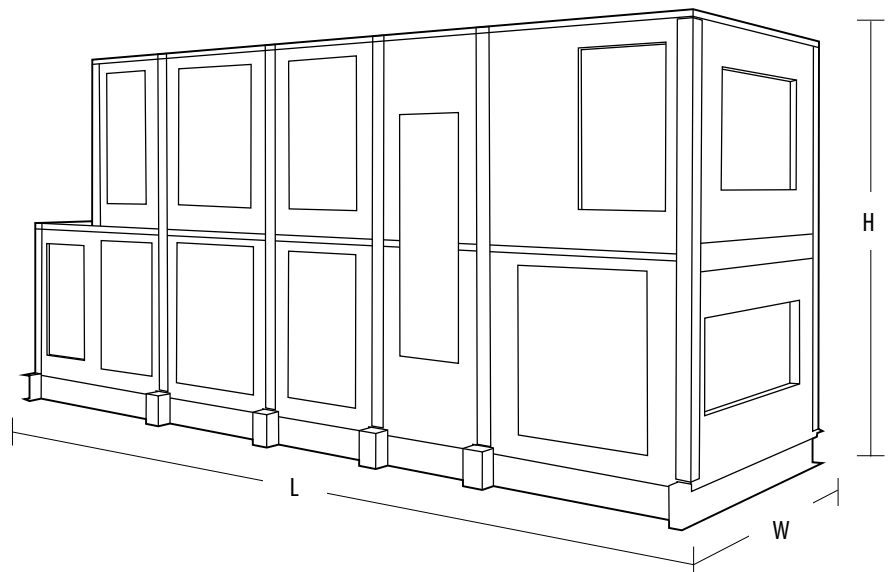
AAON M2 Series water-source heat pump self-contained units provide an ideal solution for new and replacement applications with its modular construction and premier factory installed features. Features such as variable capacity scroll compressors, direct drive backward curved plenum supply fans, head pressure control water valves, and double wall rigid polyurethane foam insulated cabinet construction provide the M2 Series WSHP with unmatched performance.



▲ Backward curved fans are quiet, energy efficient and have high static pressure capabilities.

Superior Features

- Double wall rigid polyurethane foam injected panel construction with thermal break reduces air leakage, dampens resonated sounds, increases thermal resistance, and offers a cleanable air tunnel ideal for demanding indoor air quality applications.
- Backward curved plenum supply fans are quieter, more energy efficient, and handle higher static pressure applications than forward curved supply fans.
- Units can be shipped factory assembled or shipped as individual modules to meet the installation demands of any application.
- Sloped stainless steel drain pans eliminate standing water which can support microbial growth and prevents corrosion and rust that can lead to water leaks and contaminants in the air stream.
- Removable pin hinges, lockable zinc cast handles, and slide out access to coils and energy recovery wheels provide easy access for maintenance and cleaning when required.
- Multiple base heights are available that allow ease of installation and can eliminate the need for a housekeeping pad for condensate drain trap.
- Labeled electrical components and color-coded wiring match the unit specific color-coded wiring diagram that is laminated and permanently affixed inside the control compartment.
- Factory run test report, wiring diagram, and Installation, Operation, and Maintenance manual with startup form are provided in the control compartment of every unit.
- Water-source or geothermal heat pump configurations with 10-100% variable capacity compressors for a packaged indoor system with energy efficient heating and cooling.



The M2 Series Heat Pump can be configured for a variety of applications including:

- *Total Energy Recovery with 100% Outside Air*
- *Dehumidification with modulating hot gas reheat and return air bypass*
- *Comfort or Process Heating and Cooling*
- *Premium High Efficiency Filtration for Indoor Air Quality*
- *Modular construction for renovation installations with restricted install space*



Premier Options

- Available for Constant Volume, Variable Air Volume (VAV), Single Zone VAV, and Makeup Air applications with up to 100% outside air.
- Factory installed total or sensible AAONAIRE energy recovery wheels save heating and cooling dollars by pre-cooling, dehumidifying, pre-heating and humidifying the ventilation outside air (depending on ambient conditions). Up to 80% of the exhaust air energy can be recovered by the wheel.
- Modulating Hot Gas Reheat for precise humidity control necessary to maintain occupant comfort without the temperature swings common with on/off reheat systems.
- Modulating gas heat with 5:1 turndown natural gas or 3:1 turndown LP gas applications with open or separated combustion.
- SCR (Silicon Controlled Rectifier) electric heat control for reduced power consumption, longer heater life, and improved occupant comfort.
- Multiple high efficiency filtration options with up to MERV 14 efficiency rating are available with or without monitoring devices.
- Multiple corrosion protection options including 6,000 hour salt spray tested polymer e-coated indoor coils, CuNi coaxial or SMO 254 brazed plate refrigerant-to-water heat exchangers, and 2,500 hour salt spray tested interior and exterior corrosion cabinet protection.
- ECM (Electronically Commutated Motor) driven or VFD controlled backward curved plenum supply fans for precise air flow control and reduced power consumption.
- Head pressure control with 2 or 3-way water valve allows for variable flow condenser water operation and operation with lower condenser water temperature.

M2 Series Water-Source Heat Pump Unit Dimensions

M2 Model Face Area (ft ²)	Nominal Air Flow (cfm)	M2 WSHP Capacity (tons)	Compressors/Circuits	Refrigerant-to-Water Heat Exchanger	Width (in)	Height Single Level (in)	Height Dual Level* (in)	Length (in)					
005	2,000	03	1/1	Coaxial	50	32	66	Length varies depending on options selected					
		04											
		05											
008	3,000	06	1/1	Coaxial	50	44	90						
		07											
		08											
		10											
011 014	4,000 5,500	11	2/2	Brazed Plate	62	48 54	98 110						
		13											
		15											
018 022	7,500 9,500	16	2/2	Brazed Plate	84	48 54	98 110						
		18											
		20											
		25											
018 022 026	7,500 9,500 11,000	30	2/2	Brazed Plate	84	48 54 64	98 110 130						
		026 032						11,000 14,000	40	4/2	84 96	64 70	130 142
									026 032 036				
032 036	14,000 16,000		60	4/2	96	70	142						
		70											

* Unit with energy recovery wheels will always be dual level

M2 Water-Source Heat Pump Series Features

Energy Recovery Wheel

AAONAIRE energy recovery wheel is capable of transferring sensible and latent energy from the incoming air stream to the exhaust and preconditioning the supply air. This saves energy by reducing mechanical heating and cooling use, and also lowers costs by increasing effective system capacity by 30% or more which allows smaller equipment to be selected. Energy recovery wheels are also available as sensible only and with mechanical purge that reduces carryover to less than 1%.

Modulating Hot Gas Reheat

This system delivers only the amount of reheat required for space comfort, providing precise dehumidification without overcooling the space. Occupant comfort is uniform and consistent; drastic temperature swings common to on/off type reheat systems are eliminated.

Head Pressure Control

Modulating head pressure control, via either 2- or 3-way modulating water valve, allows unit operation below 65° F condenser water temperature. This gives the unit a larger operating range, which is especially beneficial in the dehumidification mode of operation.

Variable Capacity Scroll Compressors

Variable capacity scroll compressors can modulate from 10-100% capacity. This allows the system to maintain consistent supply air temperatures at all operating conditions. During part load operation, reducing compressor capacity increases part load efficiency and ultimately saves valuable system operating costs.

Geothermal/Water-Source Heat Pump

An M2 Series water-source/geothermal heat pump unit can heat the air as energy efficiently as it cools it. By transferring heat from the earth to the building, the M2 Series heat pump requires no fossil fuels.

Polymer E-Coated Coils

A uniformly thick polymer coating is applied to the entire coil by an immersion process that minimizes the potential for gaps in coverage that may occur with spray coating. The polymer coil coating provides corrosion protection for more than 6,000 hours in salt spray testing, while maintaining the thermal performance of the coil.

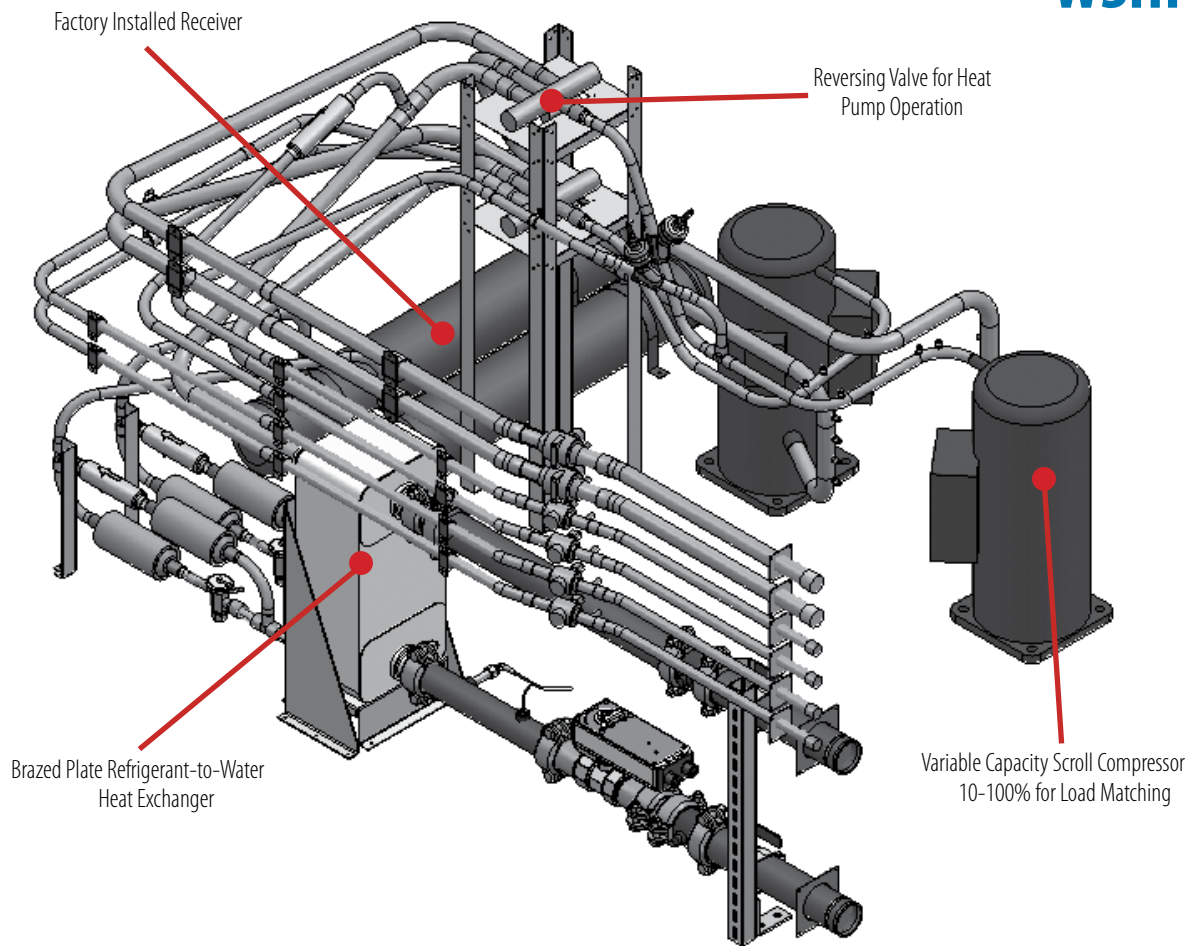


- ▶ Double wall rigid polyurethane foam panel construction increases thermal resistance, reduces air leakage and attenuates radiated noise.

Available Modules

- Fan Module**
- Filter Module**
- Mixing Box Module**
- Heating Module**
- Cooling Module**
- Blank Module**
- Controls Module**
- Energy Recovery Module**
- Water-Source Heat Pump Module**





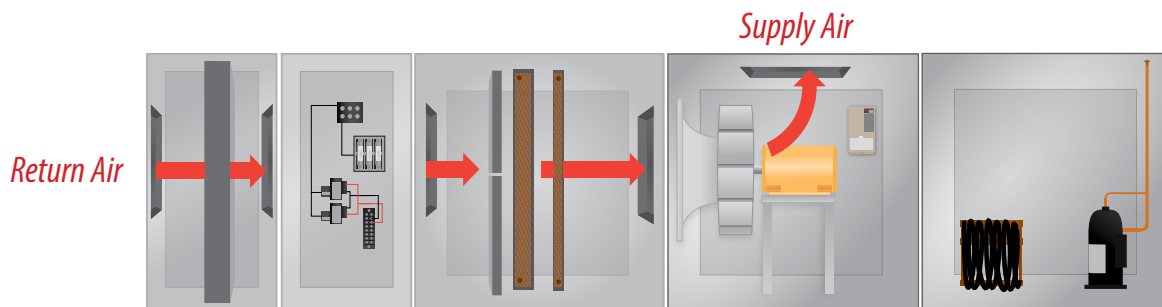
WSHP with Modulating Hot Gas Reheat Piping Layout



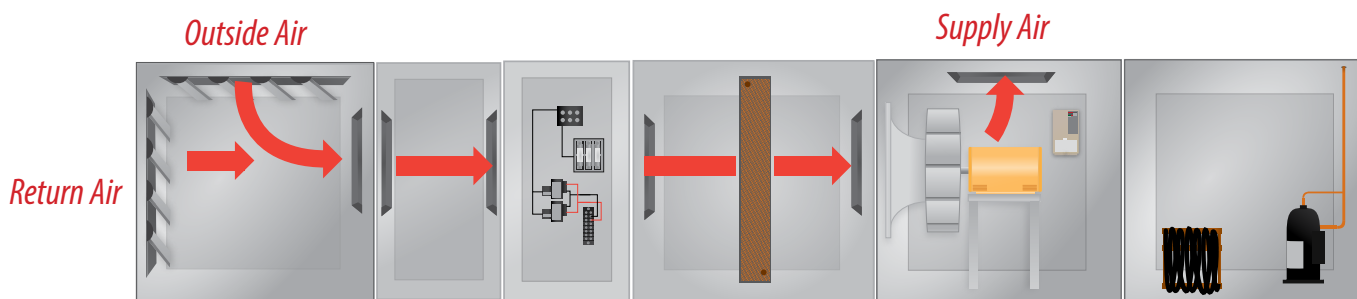
30 ton WSHP Module Interior

M2 Water-Source Heat Pump Typical Configurations

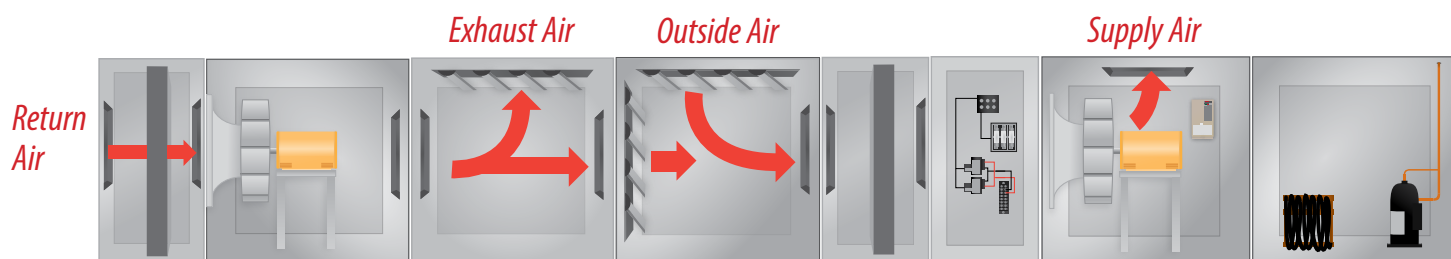
AAON M2 Series WSHP Modules provide design flexibility and allow unit to meet job application requirements.



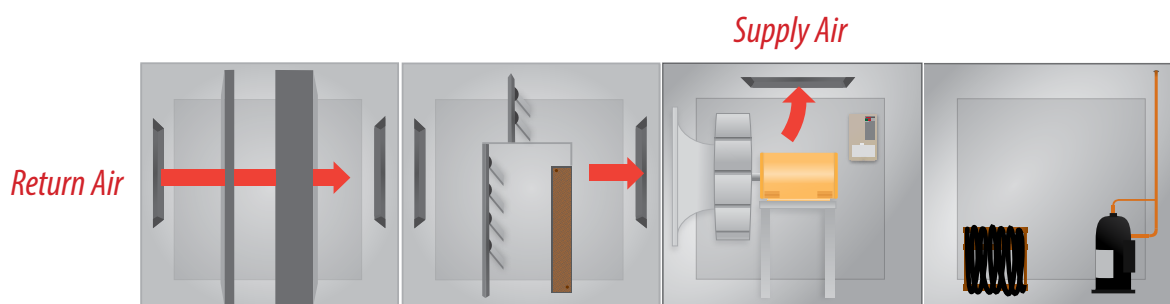
Water-Source Heat Pump with Modulating Hot Gas Reheat



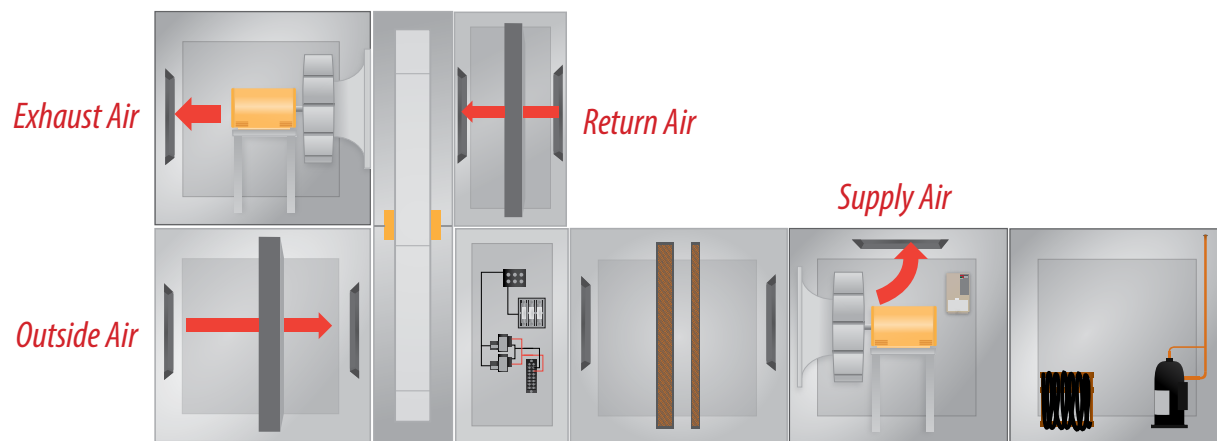
Water-Source Heat Pump with Economizer



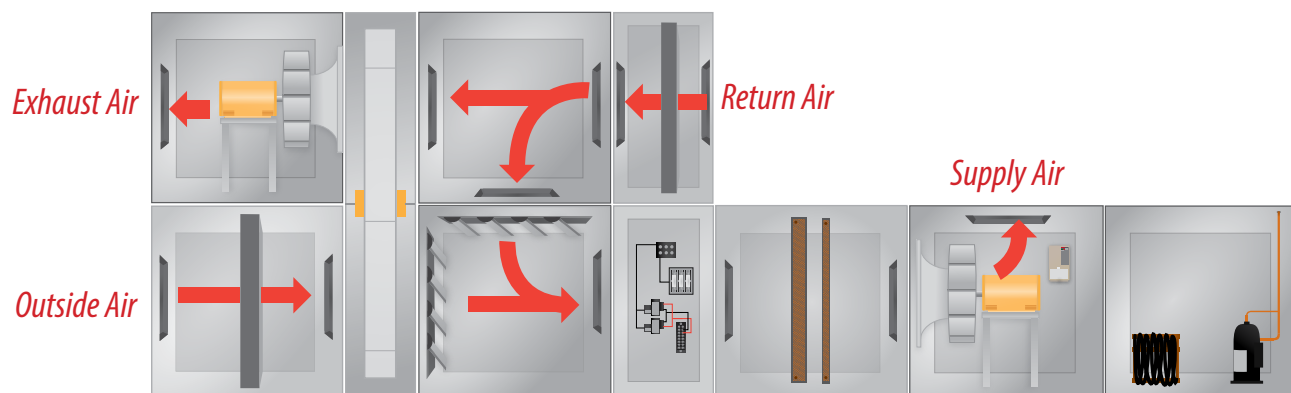
Water-Source Heat Pump with Return Fan



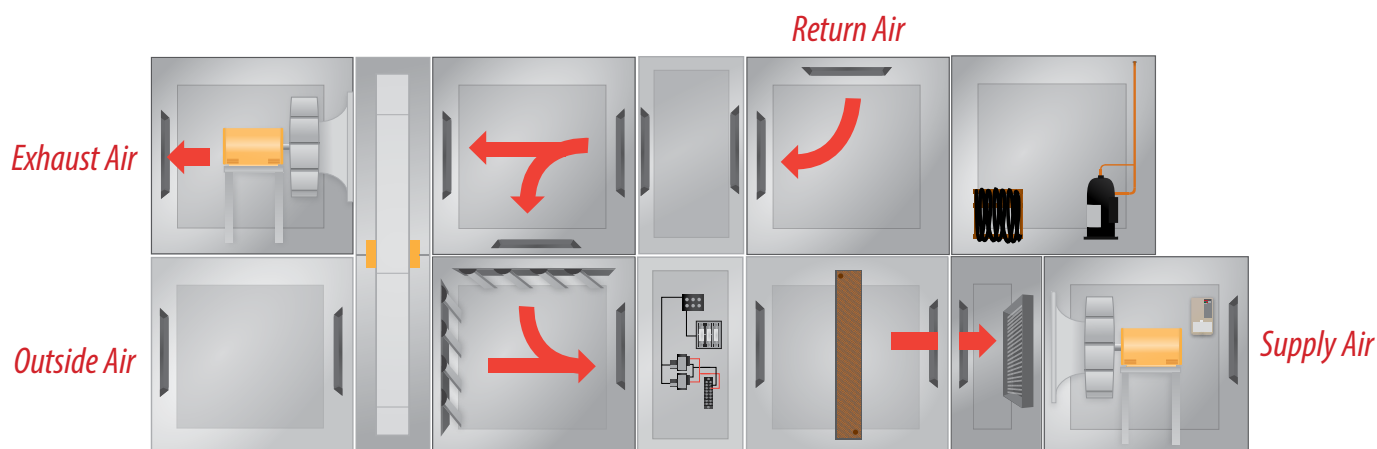
Water-Source Heat Pump with Cartridge Filter and Face and Bypass Coil



Energy Recovery Unit with Water-Source Heat Pump and Modulating Hot Gas Reheat



Energy Recovery Unit with Water-Source Heat Pump and Economizer



Energy Recovery Unit with Water-Source Heat Pump, Economizer, and Electric Heat



M2 Series Water-Source Heat Pump for Schools



A school heating and cooling system needs to provide ventilation air, be energy efficient, and handle varying sensible and latent loads without temperature and humidity swings.

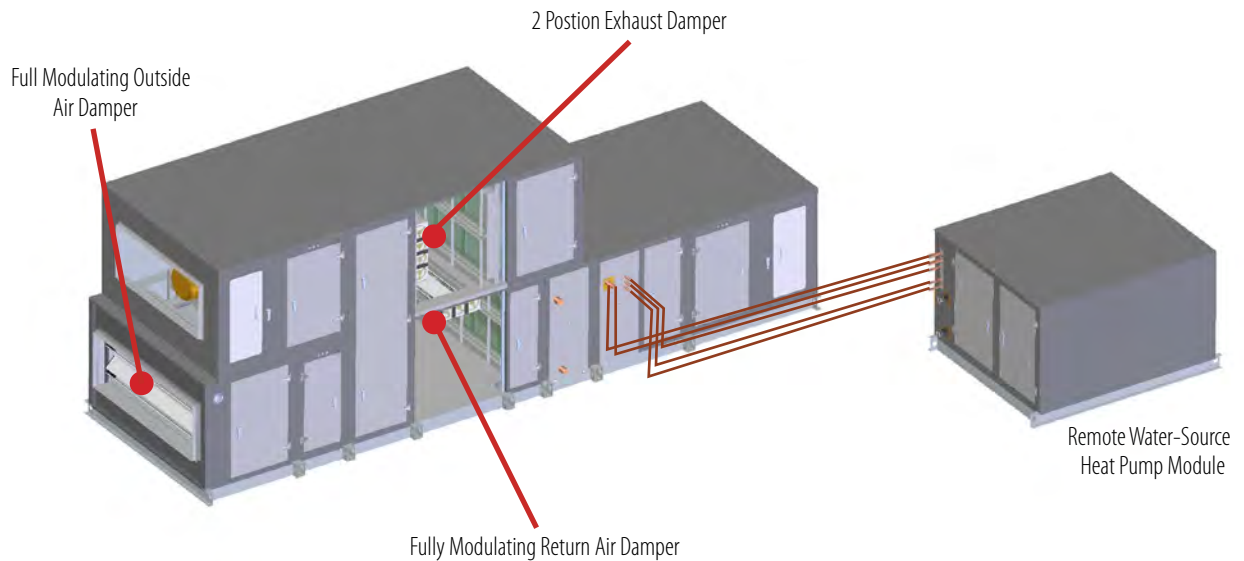
M2 Series WSHP with Energy Recovery for School Application

This M2 Water-Source Heat Pump includes an energy recovery wheel that is sized to handle 100% outside air. The energy recovery wheel enhances indoor air quality by allowing larger amounts of outside air to be provided to the space and through improved humidity control. The energy recovery wheel also provides energy savings by recycling energy instead of losing energy through the exhaust air stream. Combining the efficiency of the energy recovery wheel with the efficiency of a water-source heat pump system can save schools money in operating costs.



M2 Series Water-Source Heat Pump with Energy Recovery

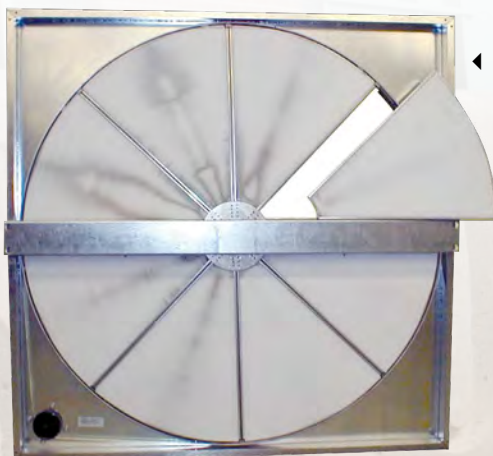
The AAON M2 Series WSHP provides several high efficiency options: Energy Recovery Wheel, Economizer, Direct Drive Backward Inclined Fans, Digital Compressors, and Modulating Electric Heat.



M2 Series WSHP with Economizer & Energy Recovery with Remote WSHP module for School Application

Variable capacity compressors combined with modulating hot gas reheat, provide tight control of the space temperature and humidity, keeping the teachers and the students comfortable and focused on learning. Variable capacity compressors are capable of modulating the cooling and heating capacity from 10-100%.

This M2 Water-Source Heat Pump unit takes efficiency one step further by providing an economizer mixing box. The economizer includes dampers and control logic designed to determine when to use outside air for cooling or heating instead of mechanical cooling or heating. Two additional items that make this unit unique are the remote mounted WSHP section for installation flexibility, and a hot water coil for emergency heat.



◀ AAON Energy Recovery Wheel



◀ M2 Series 12" cartridge filter module with up to MERV 14 air quality. Pre-filters can be selected to protect the cartridge filter.



M2 Series Water-Source Heat Pump for Office Buildings



An office building needs precise space temperature and humidity controls that can be individually controlled for different rooms within the building.

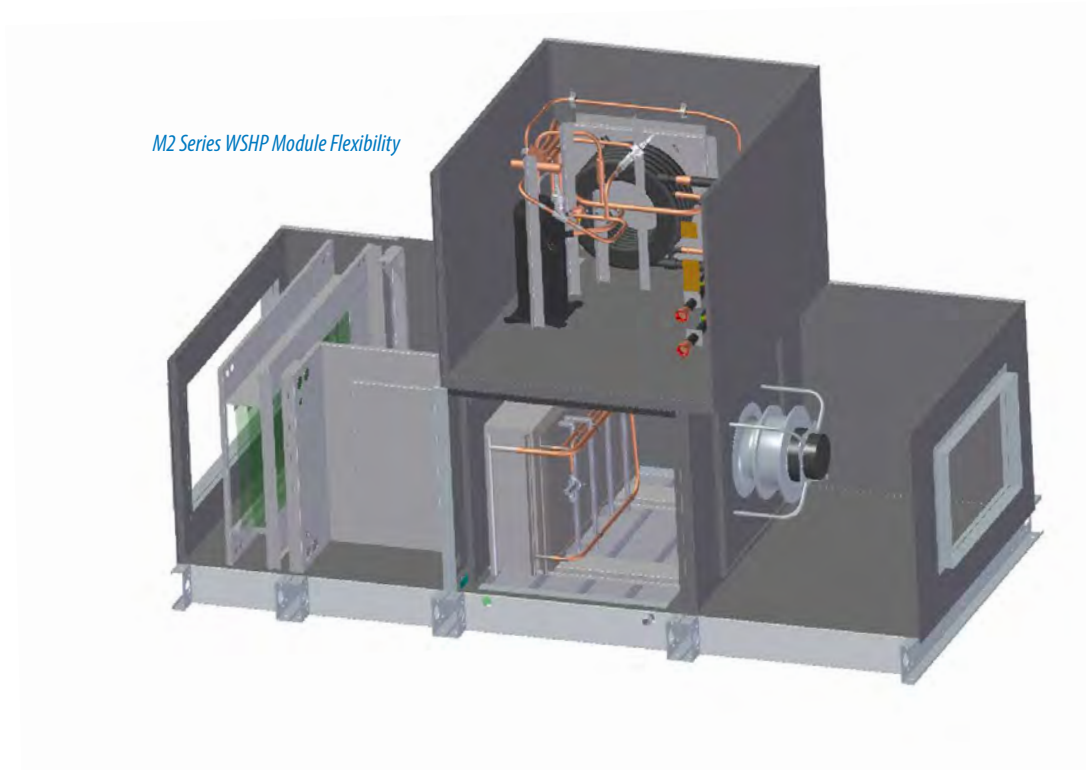
M2 Series Single Zone VAV WSHP for Office Application

This AAON single zone VAV unit includes a variable speed direct drive ECM fan to modulate the air flow based on space temperature, and a 10-100% variable capacity compressor to modulate capacity based on the supply air temperature. The unit also includes a 2-way modulating water valve that stabilizes the head pressure over a range of condenser water temperatures and saves water pump energy by allowing the use of a variable flow pump in the water loop.



M2 Series Single Zone VAV Water-Source Heat Pump

The AAON M2 Series WSHP Modules provide design flexibility and allow unit to meet job application requirements.



This AAON unit shows the flexibility of the M2 series. The modules can be arranged to fit a specific application. This unit allows for a smaller footprint by stacking the water-source module on the top level. When the unit ships assembled from the factory, all refrigerant piping is done internal to the unit so no refrigerant piping is necessary in the field, only water piping.



M2 Series with WSHP Module on the Top Level and AHU Modules on the Bottom Level

AAON Environmentally Friendly HVAC Product Family

ROOFTOP UNITS (2-240 tons)



RZ/RL SERIES



RN SERIES



RQ SERIES

OUTDOOR AIR HANDLING UNITS (800 - 100,000 + cfm)



RZ/RL SERIES



RN SERIES



RQ SERIES

CONDENSING UNITS (2-230 tons)



CB SERIES



CF SERIES



CN SERIES



CL SERIES

PACKAGED OUTDOOR MECHANICAL ROOMS (4-540 tons)



BOILER MECHANICAL ROOM



LF SERIES



LN SERIES



FLUID COOLER



LZ SERIES

SELF-CONTAINED UNITS (3-70 tons)



SB SERIES

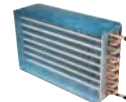


SA SERIES



M2 SERIES

COILS



BOOSTER, HYDRONIC, & DX

INDOOR AIR HANDLING UNITS (800 - 100,000 + cfm)

F1 SERIES



H3 SERIES



V3 SERIES



SA SERIES



M2 SERIES



M3 SERIES

WATER-SOURCE HEAT PUMPS (1/2 - 230 tons)



RQ SERIES



RZ/RL SERIES



RN SERIES



VERTICAL & HORIZONTAL WSHP



M2 SERIES



SA SERIES

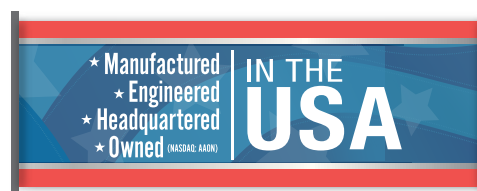


SB SERIES



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